TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

REMOTELY CONTROLLED SIZE/VOLUME REDUCTION TECHNIQUES FOR RH MLLW AND RH TRUW

Identification No.: RL-MW02
Date: October 2001

Program: Waste Management
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP02
Waste Stream: 1566 – RH TRU Stored/New, and 3490 – M91 Feed
TSD Title: TBD
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: Future M-91 Facility.

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" priority:

_X_ 1. Critical to the success of the ACPC.
____ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Remotely Controlled Size and Volume Reduction Techniques for RH MLLW and RH Transuranic Waste (TRUW).

Need/Opportunity Category: *Technology Need* -- There is no existing or currently identified technology capable of solving the Site's problem (i.e., technology gap exists, no baseline approach has been identified).

Need Description: Develop a remotely operated size and volume reduction system for RH MLLW and TRUW items over a wide range of sizes, shapes, weights, materials of construction, and types and levels of contamination. This technology will be used to reduce the size and/or void volume associated with large debris to optimally load the Waste Isolation Pilot Plant (WIPP) shipping containers. Selecting a size and volume reduction technology from existing technologies such as cutting, shredding, compaction, or metal melting, and converting it to remote operation may require substantial development.

Schedule Requirements:

Earliest Date Required: 2007

Latest Date Required: 2013

Technology needs to be established between end of FY 2007 (conceptual design start) and 2013 (start of operations), to support the M-91 facility baseline.

Problem Description: There is a current inventory of 196 m^3 of RH MLLW and 204 m^3 of RH TRUW. An additional 3,481 m^3 of RH MLLW and 1,690 m^3 of RH TRUW are forecast. Furthermore, 1,672 m^3 of failed equipment presently stored in the Plutonium-Uranium Extraction (PUREX) tunnel may need to be retrieved and processed. A volume-reduction technology could significantly reduce these quantities.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: Potential life cycle savings are estimated to be up to $10,000K. A total of 1,000 cubic meters of waste is projected. Cost estimate is based on a 20 percent volume reduction of waste at $50K per cubic meter.

Benefit to the Project Baseline of Filling Need: Allows cost-effective packaging of waste.

Relevant PBS Milestone: A2G-08-109 M-91-15 Complete Acquisition of Facilities and Initiate Treatment of RH and Large Container (CH) LLMW

Functional Performance Requirements: Provide size/volume reduction capability for RH MLLW and RH TRUW such as cutting, shredding, compaction, and metal melting. The system should be highly reliable, and easy to maintain and clean.

Work Breakdown Structure (WBS) No.:	***TIP No.:***
1.2.2	Candidate

Justification For Need:

Technical: No system exists to reduce the volume and treatment cost of RH MLLW and RH TRUW debris.

Regulatory: The M-91 Milestone required submittal of a RH MLLW and a RH TRUW Project Management Plans in June 1999 and June 2000. M-91 also requires that RH MLLW treatment be initiated by June 2008 and RH TRUW treatment initiated by June 2005.

Environmental Safety & Health: There are occupational health concerns associated with processing RH waste.

Cultural/Stakeholder Concerns: Facilitate cleanup and increase the cost effectiveness of the cleanup effort.

Other: None identified.

Current Baseline Technology: Treat/dispose of RH MLLW and RH TRUW without reduction in volume.

End-User: Waste Management.

Contractor Facility/Project Manager: TBD.

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DOE End-User/Representative Point-of-Contact: Kevin Leary, DOE-RL, (509) 373-7285, Fax (509) 372-1926, Kevin_D_Leary@rl.gov.

	RH MLLW	RH TRUW
Waste volume, m^3	Existing: 196 m^3 Projected (5 years): 3,481m^3 Total: 3,679 m^3	Existing (HAN05): 204 m^3, Existing (PUREX Tunnels): 1,672 m^3, Projected (HAN05-5 years): 1,690 m^3 Total: 3,566 m^3
Waste form	Large sizes and shapes of debris (e.g., failed equipment)	Large sizes and shapes of debris (e.g., failed equipment)
Waste stream numbers	3490	1566
Contaminants and co-contaminants	Beta and gamma radiation; EPA Codes D001-D043, F001-F005, PXXX, and UXXX	Alpha, beta, and gamma radiation
Function of technology	Volume Reduction	Volume reduction
Source category	Various Hanford Programs	Various Hanford Site programs